

The Ascalaphidae (Neuroptera) of the Balkan Peninsula¹

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Abstract: First records of *Libelloides rhomboideus* in Albania, of the genus *Bubopsis* in Macedonia and Bulgaria and of the genus *Deleproctophylla* in Macedonia are established. New localities of all five species of Ascalaphidae on the Balkan Peninsula are reported. The new records outline the northern borders of the ranges of three species. The erroneous information in some published data on the distribution of the treated species is corrected. The variability of *Libelloides lacteus* and *L. macaronius* and some diagnostic characters of other species are discussed. Original information on the habitats of all species is given.

Key words: Neuroptera, Ascalaphidae, Balkan Peninsula, distribution, variability, habitats.

Introduction

The ascalaphids, together with myrmeleontids and nemopterids, are the most attractive representatives of Neuroptera. The family Ascalaphidae numbers ca. 400 species (ASPÖCK & ASPÖCK 1999), distributed mainly in the tropics and subtropics of the Old and New World. Single species only occur in the temperate latitudes. The range of the family reaches northwards in the Palearctic to the southern parts of Central Europe, South Siberia and southern part of the Far East – *Libelloides longicornis* (LINNAEUS), *L. coccajus* (DENIS & SCHIFFERMÜLLER), *L. macaronius* (SCOPOLI) and *L. sibiricus* (EVERSMANN).

Because of their large sizes, the ascalaphids have been for a long time an object of interest and already in the 19th century more than a hundred species have been known. The family was reviewed perfectly for that time by VAN DER WEELE (1908). In his monograph 201 species were included. The last reputed taxonomist on Neuroptera of the World the late Bo Tjeder made a comprehensive attempt to revise the Afrotropical ascalaphids. The results with many descriptions of new taxa were published by TJEDER & HANSSON (1992). Information on the species distribution respectively in Europe and in the

Western Palearctic was summarized by ASPÖCK et al. (1980, 2001).

Five species and an additional subspecies occur on the Balkan Peninsula. Another species, *Deleproctophylla variegata* (KLUG), is distributed in Greece on Khios (Chios) Island which is not a part of the Balkan Peninsula. The opinion of WACHMANN & SAURE (1997) that the range of *Libelloides longicornis* reaches eastwards to Croatia is not correct. On the basis of examination of museum collections in Sofia, Berlin and Eberswalde and of my own samples, new data which enlarge the knowledge on the distribution of the five Balkan species were accumulated. The following abbreviations for collections are used:

NMNHS	National Museum of Natural History, Sofia;
HMB	Museum für Naturkunde der Humboldt-Universität zu Berlin;
DEI	Deutsches Entomologisches Institut, Eberswalde.

¹ The present paper is dedicated to Prof. Dr. Horst Aspöck on the occasion of his 65th anniversary. Prof. Aspöck is the founder of the current taxonomy of Raphidioptera and one of the best authorities on Palearctic Neuroptera, initiator and co-author (with Prof. Dr. Ulrike Aspöck, H. Hölzel and H. Rausch) of monographs and a catalogue of snake flies of the World and of Western Palearctic Neuropterida. The fate met me with him in the old 1967. A small expedition to Anatolia led by Horst stopped to pass the night in Sofia and all the time till early in the morning was spent in talking about our favourite Neuroptera. A second similar appointment in Sofia in 1978 during another expedition of Aspöcks to Greece and Anatolia had as a result the joint description of *Xanthostigma zdravka* (POPOV, ASPÖCK & ASPÖCK) from Caucasus. Unforgettable remain for me the impressions from the two meetings of the German-speaking neuropterologists (the Austrian ones, the late Peter Ohm and me) in 1983 and 1984 in the cosy home of Horst and Ulrike Aspöck in Vienna. The Aspöcks initiated also the international symposiums on Neuroptera and with their great erudition they are in the centre of activity of the International Association of Neuropterology, including as former President and Co-Presidents. The contacts during these meetings gave me a good knowledge. Therefore I consider Horst Aspöck for my teacher in the field of neuropterology like as Dr. Ivan Buresch, Member of the Bulgarian Academy of Sciences, called by Aspöcks Nestor of the Zoology in Bulgaria (ASPÖCK & ASPÖCK 1976), is my teacher in the field of zoology. The Bulgarian entomologists, who know Horst from international meetings, appreciate highly his work and wish every success to the unique tandem of Aspöcks.



Fig. 1: *Bubopsis andromache* ♂ from Southwestern Bulgaria (Kozhuh Hill).

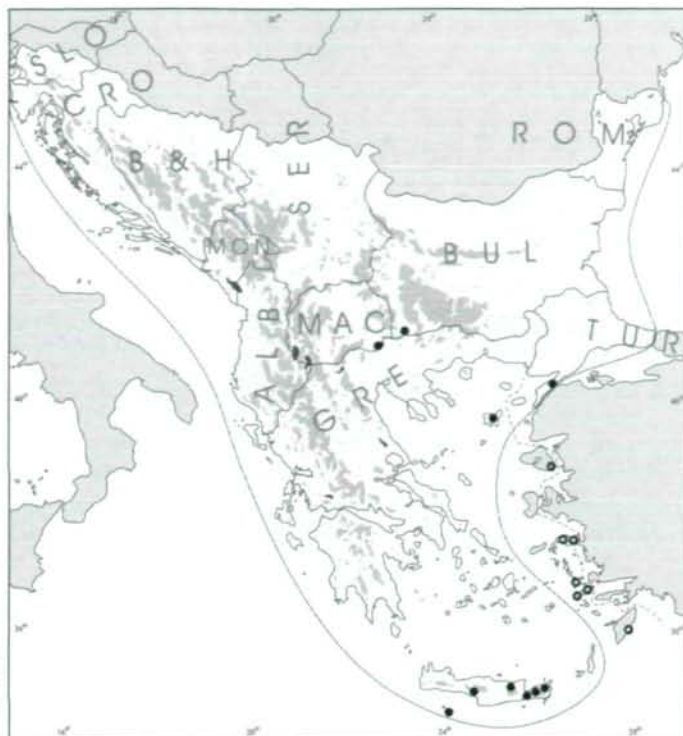


Fig. 2: Distribution of *Bubopsis andromache* on the Balkan Peninsula. Localities in Greece outside the Balkan Peninsula are marked with rings. Areas above 1000 m altitude are shaded.

List of species

Bubopsis andromache ASPÖCK, ASPÖCK & HÖLZEL 1979 (Fig. 1–2)

Material from the Balkan Peninsula: New for Macedonia: Bogdanci near Gevgelija, 6.7.1917, 1 ♀, leg. Dr. Schulze (coll. HMB). New for Bulgaria: Kozhuh Hill near Petrich in Struma Valley, on light, 6.7.2003, 1 ♂, leg. S. Beshkov (coll. NMNHS). **Crete (Greece):** Eastern Crete, Panayia Exakusti Monastery above Malai (Males) near Ierapetra, Lasithi District, 1.7.1925, 1 ♀, leg. A. Schulz; Eastern Crete, Mesa Mouliana near Sitia, Lasithi District, 6.7.1925, 1 ♀, leg. A. Schulz (both coll. HMB). **Other material:** **Anatolia:** Izmir (Smyrna), Izmir Province, 1 ♀, leg. Krüper, identified as *Bubopsis hamatus* KLUG; Gülek, Cilician Taurus, Adana Province, 1 ♀, leg. Holtz; Cilician Taurus, Adana Province, 1 ♂, 1 ♀, leg. Holtz (all coll. HMB). **ISRAEL:** Jerusalem, Jerusalem Province, 1 ♀, leg. Staudinger, identified as *Bubopsis hamatus* KLUG (coll. HMB).

Distribution: In continental Europe, this species is established only in South Macedonia and Southwestern Bulgaria (the present paper) and in the European Turkey in the vicinities of Gelibolu (Gallipoli) by LETARDI (1991). European Turkey is omitted in the range reported by ASPÖCK et al. (2001). On the Balkan Peninsula, it is known further from the islands of Limnos (Lemnos), Crete and Gavdhos (Gavdos). The species occurs in Greece also on the Anatolian islands of Lesvos (Lesbos), Samos, Kalimnos (Kalymnos), Kos and Rodhos (Rhodes) which do not belong to the Balkan Peninsula and to Europe. Paratypes of *Bubopsis andromache* were published as *Bubopsis hamatus* KLUG 40 years before its description from Samos (WERNER 1934), Limnos (WERNER 1937) and Lesvos (WERNER 1938). The range of *B. andromache* in-

cludes the Eastern Mediterranean to Israel. The localities in Macedonia and Bulgaria are the northernmost and westernmost ones of the species and the new records enlarge the knowledge on its occurrence in these directions.

On identifying the specimen from Macedonia 15 years ago, I considered it as mislabelled because of the following reasons: First, the country is located far away from the range known during the description of *Bubopsis andromache*. Second, more material is lacking in other museums, although Macedonia is visited regularly from European entomologists for collecting trips or on the way to Greece. Third, ASPÖCK et al. (1979) mentioned in the description that near all localities are situated close to seashores. After the finding of *B. andromache* in European Turkey and Bulgaria, it is evident there is not a confusion with the Macedonian locality.

The new records of *Bubopsis andromache* from Cilician Taurus give an opportunity to revise the localities in Anatolia of *Bubopsis hamatus* (as *B. hamata*) reported by ŞENÇONCA (1979). The material from Gözne near Mersin and Kızıldağ near Adana as well the undoubted finding at Bornova near Izmir belong to *B. andromache* and only the information for Ceylanpınar in Urfa Province considers the true *B. hamatus*.

Morphology: The male from Bulgaria shows some small differences in comparison with the description of the species (ASPÖCK et al. 1979).

Antennae brown, darken gradually from the base to the tip. Segments of the antennal club reddish-brown ringed distally. The first three segments of the club yellowish-brown, the rest dark brown.

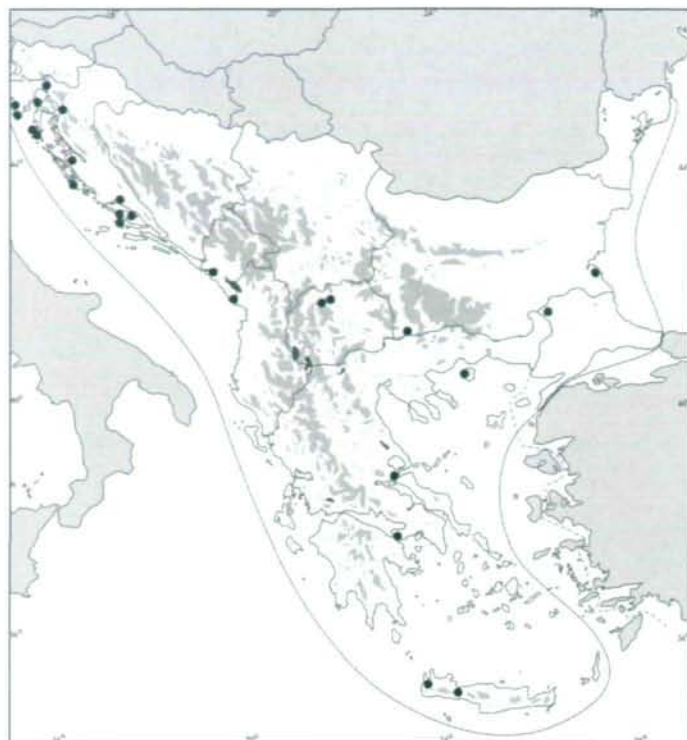


Fig. 3: *Deleproctophylla australis* ♀ from Southwestern Bulgaria (Novo Konopladi).

Fig. 4: Distribution of *Deleproctophylla australis* on the Balkan Peninsula. Areas above 1000 m altitude are shaded.

In fore wing, C pale brown; Sc dark brown; R dark brown in its proximal half and pale brown in its distal half; Rs (Rs + Ma) black; M (Mp) yellow, its distal end black; Cua black; Cup yellow in its basal half, black in its distal half; A1, A2 and A3 yellow or brown. Basal cross-veins yellow or brown, all the rest black. Pterostigma of all wings pale brown, with two cross-veins. Length of fore wing: 23 mm. Hind wing as fore wing but R wholly dark brown.

Habitat: Kozhuh in Southwestern Bulgaria is a volcanic hill located around the mouth of Strumeshnitsa (Strumica) River into Struma (Strimon) River. The volcanic cone is divided by the rivers. The relative height of the hill above the river is 200 m. According to Dr. Stoyan Beshkov (pers. comm.) the specimen has been collected near the top of the hill (281 m altitude) on a meadow with high herbaceous vegetation on sandy soil in a rocky area near a quarry. The meadow is surrounded by a low-growing wood of *Quercus*, *Carpinus orientalis* and *Ulmus minor*.

Deleproctophylla australis (FABRICIUS 1787) (Fig. 3-4)

Material: New for Macedonia: Treska River near Skopje, 6.8.1941, 1 ♀ (with phylla), leg. G. Stoyanov; Skopje, 2.8.1941, 1 ♀ (without phylla), leg. D. Zlatarski (both coll. NMNHS). **Second record for Bulgaria:** Novo Konopladi near Petrich in Struma Valley, 2-3.7.2003, 3 ♀ (with phylla), leg. V. Gashtarov (coll. NMNHS).

Distribution: The range covers the Northern Mediterranean from Corsica to Anatolia not including the northern parts of the Apennine and Balkan peninsu-

las. In Bulgaria, this species was known so far only from Ropotamo River (CHLÁDEK 1983). European Turkey (POPOV 1977) has to be added to the countries in the range listed by ASPÖCK et al. (2001). The new localities outlines the northern border of the range: Istria (DEVETAK 1995) – Ulcinj in Montenegro (DEVETAK 1995) – Skopje – Petrich – Edirne – Ropotamo.

The data of SÉMÉRIA & BERLAND (1988) for the occurrence of *Deleproctophylla australis* in continental France (out of Corsica): Nîmes, Toulon, Cannes, as well as of *Deleproctophylla variegata* in France concern *Deleproctophylla dusmeti* NAVÁS. The colour figure (SÉMÉRIA & BERLAND 1988: Pl. I, Fig. 5) of *D. variegata* (as *Theleproctophylla*) is in fact *D. australis*. The same authors indicate in the description of *D. australis* that the reddish-brown spot below the pterostigma exists on all four wings (a character of *D. australis*) or on the hind wing only (a character of *D. dusmeti*).

The information of LUPPOVA (1987) for the distribution of *D. australis* in Central Europe, Hungary and the southern part of the former USSR (South Ukraine and Southern European Russia) is not correct. Such is the case with the opinion of ZAKHARENKO & KRIVOKHATSKY (1993) for an occurrence in Caucasus and Central Asia.

Morphology: The spot on the fore wing in both specimens from Macedonia covers fully two cells and parts of adjacent four ones in the radial area below the pterostigma. The cell below the pterostigma of one female from Bulgaria is slightly shaded only in its fore part; the shaded part covers ca. 20 % of the cell surface. The same cell of the other two females from Bulgaria is scarcely shaded

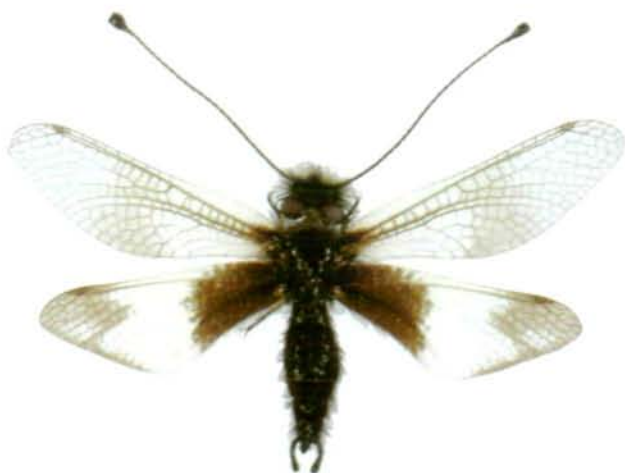


Fig. 5: *Libelloides lacteus* ♂ from South Bulgaria (Western Rhodopes: Besapara Hills).

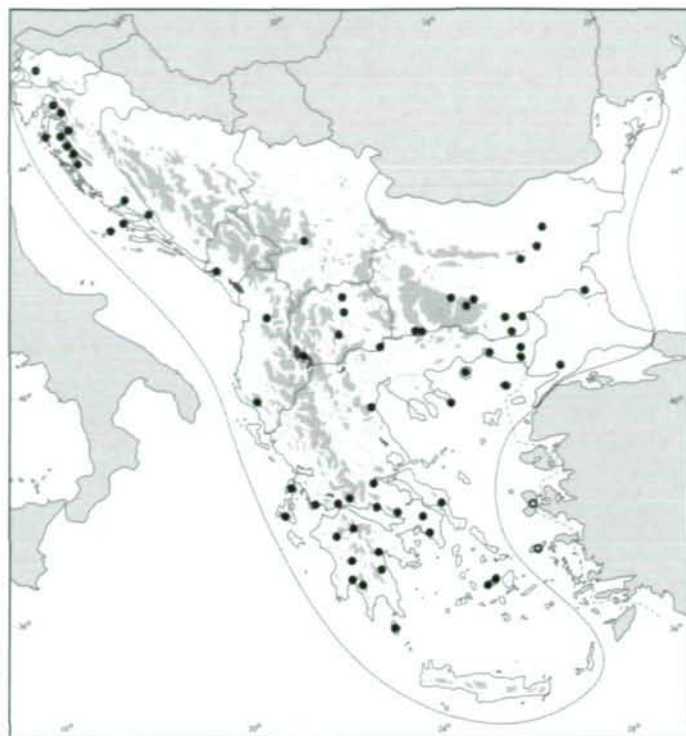


Fig. 6: Distribution of *Libelloides lacteus* on the Balkan Peninsula. Localities in Greece outside the Balkan Peninsula are marked with rings. Areas above 1000 m altitude are shaded.

along the hind margin of the pterostigma; only ca. 3 % of the cell surface are shaded (Fig. 3). Pterostigma of fore and hind wings brown, only in the female from Skopje yellowish-brown. This specimen however has been exposed to the daylight in a museum exhibition for decades and very likely is discoloured. Pterostigma of fore and hind wings of all specimens with 3-4 cross-veins. Length of fore wing of the five specimens: 21.5-25.4 mm.

Habitat: According to Mr. Victor Gashtarov (pers. comm.) the three females from Bulgaria were collected east of Novo Konopladi Village in the direction of Kapatovo Village on the field boundaries between vineyards and other fields. Furthermore the species has been observed on Kozhuh Hill (a specimen from the northern foot of this volcanic hill was identified by me) as well as on Marena Hill between the villages of Novo Konopladi and General Todorov in open areas with herbaceous vegetation which begins to dry early in July, with or without single trees of *Quercus*.

Libelloides lacteus (BRULLÉ 1832) (Fig. 5-6)

New localities on the Balkan Peninsula: Macedonia: Galičica Mts., 1400 m, 22.6.1995, 1♂, 1♀, leg. S. Abadjiev (coll. NMNHS). Bulgaria: Slavjanka Mts.: above Petrovo, 1100 m; Livada site, 1450-1550 m; Western Rhodopes: Besapara Hills near Byaga, north of Bratsigovo; Lukovitsa River, 3 km S of Asenovgrad; Bachkovo Monastery, 400 m, 600 m; Eastern Rhodopes: Studen Kladenets in Arda Valley; Avren in Krumovitsa Valley; Arda Chalet near Dabovets in Arda Valley; Tundja Valley: Vetren near Maglizh, 20 km N of Stara Zagora; Strandja Mts.: Katun Dere Valley, 4 km S of Zvezdets (all coll. NMNHS). Greece: Aisimi (Essimi), 18 km N of Alexandroupolis, Evros District, Eastern Macedonia and Thrace

Province, 18.5.1987, 2♀, leg. P. Beron; Mount Athos, Mount Athos Province, 19-29.6.1936, 6♀, leg. Dr. K. Tuleschkov; Ayios Nikolaos (Agios Nikolaos), south of Arakhova (Arachova), Fokis District, Central Greece Province, 3.5.1998, 1♂, leg. S. Beshkov, J. Gelbrecht (all coll. NMNHS).

Other material: **Anatolia:** Cevizli, Antalya Province, Taurus Mts., 1200 m, 19.5.1999, 1♀, leg. S. Beshkov, J. Gelbrecht; 3 km S of Cevizli, Antalya Province, Taurus Mts., 1200 m, 12.5.1999, 2♂♂, leg. S. Beshkov, J. Gelbrecht (all coll. NMNHS).

Distribution: South France, South Italy, Balkan Peninsula and Anatolia.

Variability: The attention of taxonomists has been attracted for a long time by the variability of the species of *Libelloides*. Two species were united by VAN DER WEELE (1908) in one species with two subspecies and one race. TÁBORSKÝ (1936) advanced this subdivision into three subspecies, one of which includes two races and another includes two varieties. He reported for the Balkan Peninsula three of them: *L. lacteus lacteus* (BRULLÉ), *L. lacteus lacteus dalmaticus* (VAN DER WEELE) and *L. lacteus expansus* var. *tuleskovi* (TÁBORSKÝ). Táborský used always the then available name *L. ottomanus* (GERMAR) instead of *L. lacteus* (BRULLÉ). All subspecies and races were synonymized without comments by ASPOCK et al. (1980). Although the case is evident, I will adduce proof of the correctness of the synonymization. The material from Bulgaria corresponds to *L. lacteus lacteus*, described from Greece, and *L. lacteus klapaleki* (TÁBORSKÝ), described from France. The two subspecies differ from one another in two insignificant details: number of the cross-veins in the radial area of the fore wing between the base of Rs,

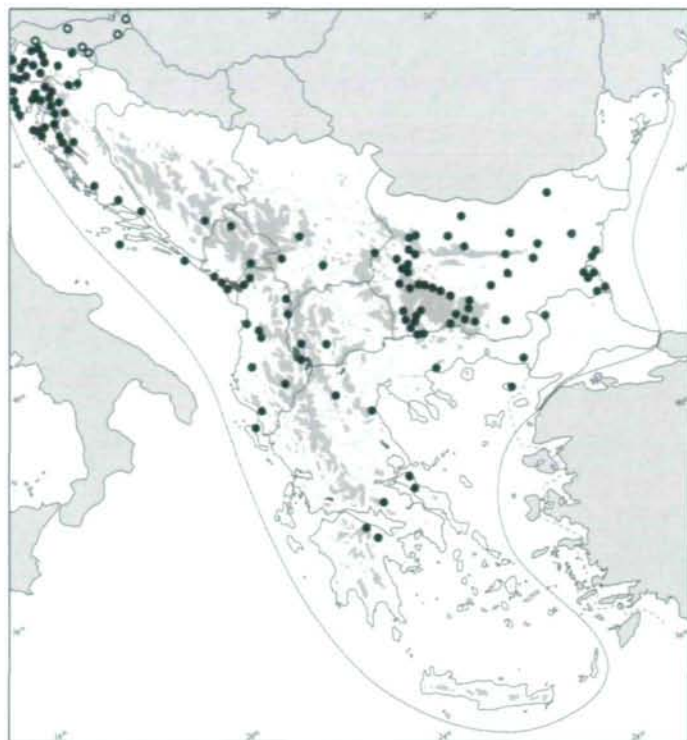


Fig. 7: *Libelloides macaronius* ♂ from Southwestern Bulgaria (Rila Mts.: Kostenets).

Fig. 8: Distribution of *Libelloides macaronius* on the Balkan Peninsula. Localities in Slovenia outside the Balkan Peninsula are marked with rings. Areas above 1000 m altitude are shaded.

i.e. Rs + Ma, and its first bifurcation (1-2 in *L. l. lacteus* and 3-5 in *L. l. klapaleki*) and shape of the last (the biggest) from the so formed cells (twice longer than wide in *L. l. lacteus* and three times longer in *L. l. klapaleki*).

As regards the shape, even the figure of TÁBORSKÝ (1936: Fig. 1) in fact does not correspond to the description of *L. l. klapaleki*. The material from Bulgaria (52 specimens, 104 fore wings) divides as follows: cell longer than wide 1.5-1.9 times – 50 wings (48 %); 2.0-2.9 times – 42 wings (40 %); 3.0-3.5 times – 12 wings (12 %). The character is not constant as a rule because the cell shape on the left and right wing comes under one and the same category in 31 specimens or 60 % of all specimens only.

Division of the material from Bulgaria after the number of cross-veins shows predominance of the typical form (Table 1). The number is different on the left and right wing in more than a half of the specimens – 28 specimens or 54 %. According to a similar investigation (PRINCIPI 1952), *L. l. klapaleki* prevail in South Italy. The different correlation between the forms (Table 2) however is not sufficiently the existence of distinct subspecies to be accepted.

TÁBORSKÝ (1936) described var. *tuleskovi* of subsp. *expansus* after 1♂ from Slavyanka Mts. (Bulgaria). This variety was not reported over again and is absent in the present material, i.e. it is an infrasubspecific form, as it was described.

Habitat: The species inhabits according to my observations in Katun Dere Valley in Strandja Mts. (Bulgaria) at the end of May an open sloping treeless area with high dry herbaceous vegetation, changing in steep rocks. It

was not found in the same season in another locality throughout Strandja Mts. Concerning the requirements to the temperature and humidity and about the behaviour of the adults see under *L. macaronius*.

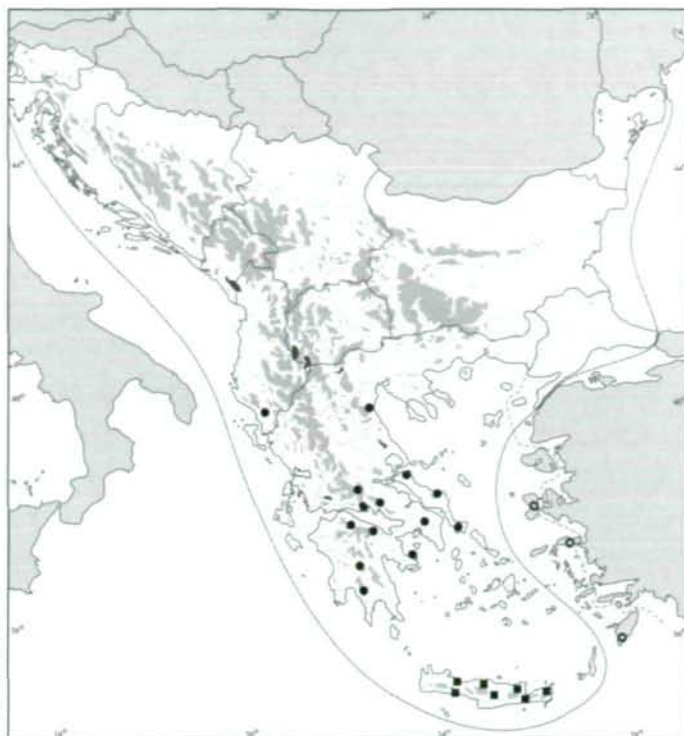
Libelloides macaronius (SCOPOLI 1763) (Fig. 7-8)

New localities: **Albania:** Seferçe, N of Vermosh, Shkodër District, 16.7.1984, 1 ♀, leg. K. Misja; Ostrovica Mts., Skrapar District, 15.7.1958, 1 ♀, leg. B. Kitanov (both coll. NMNHS). **Macedonia:** Galičica Mts., 1400 m, 22.6.1995, 1 ♀, leg. S. Abadjiev (coll. NMNHS). **Bulgaria:** Northern Bulgaria: Dermantsi near Lukovit; Pleven; Kubrat near Razgrad; Western Stara Planina: Lakatnik; Kurilo (Novi Iskar) near Sofia; Voynagovtsi near Sofia; Central Stara Planina: Beli Osam near Troyan; Trevnenska Mts., E of Krastets, 950 m; Eastern Stara Planina: above Sliven; Kotel; Krasimir near Provadia; Mountainous region of Kraishite: Tsegilovtsi near Tran, 900 m; Vitosha Mts.: Boyana, 800 m; above Planinets Chalet, 1450 m; Kopitoto site, 1350 m; Rila Mts.: Damka Peak, 1600 m; Dolna Banya near Samokov; Kostenets Resort, 800 m; Struma Valley: Simitli near Blagoevgrad; Pirin Mts.: Dobrinishte near Bansko, 900 m; below Gotse Delchev Chalet, 1100 m; Lilyanovo near Sandanski; St. Ilija Monastery above Melnik, 800 m; Karlanovo near Melnik; Slavyanka Mts.: above Petrovo, 1100 m; Western Rhodopes: Peshtera; Devin, 1000 m, 1100 m; Trigrad near Devin, 1000 m; Shiroka Laka near Smolyan, 1100 m; Persenk Mine near Chepelare, 1000 m; Rozhen Pass near Chepelare, 1400 m; Eastern Rhodopes: Studen Kladenets in Arda Valley; Strandja Mts.: between Malko Tarnovo and Ahtopol (all coll. NMNHS). **GREECE:** Orfanion (Orfani), Kavala District, Eastern Macedonia and Thrace Province, 12.6.1942, 1 ♀, leg. P. Drenski (coll. NMNHS).



Fig. 9: *Libelloides rhomboideus rhomboideus* ♀ from South Anatolia (Cevizli).

Fig. 10: Distribution on the Balkan Peninsula of *Libelloides rhomboideus rhomboideus* (localities on the Peninsula with circles and in Greece outside the Peninsula with rings) and *Libelloides rhomboideus cretensis* (squares). Areas above 1000 m altitude are shaded.



Distribution: Southeastern Europe from Northeastern Italy (Trieste District in Friuli-Venezia Giulia Province), Austria, Czech Republic, Southeastern Poland to the Balkan Peninsula, Ukraine and Southern Russia; Western Asia from the Eastern Mediterranean to Kazakhstan, Tajikistan and Kyrgyzstan. Slovakia (ZELENÝ 1977), European Turkey (POPOV 1977) and Syria (SZIRÁKI 1998) have to be added to the countries in the range listed by ASPÖCK et al. (2001).

Libelloides macaronius does not occur in France, Switzerland and Germany. Although the information of LERAUT (1981) that its finding in France needs confirmation, SÉMÉRIA & BERLAND (1988) mention that it occurs near Cannes and in Alpes Maritimes. The inclusion of Switzerland (INSOM et al. 1979), Schaffhausen in Switzerland and South Germany (SÉMÉRIA & BERLAND 1988) in the range of the species is incorrect. All these data refer to *Libelloides longicornis*.

Variability: Numerous names of forms with different taxonomical rank were described as belonging to this species, too. Three distinct species, *L. macaronius* (SCOPOLI), *L. kolyvanensis* (LAXMANN) and *L. pupillatus* (RAMBUR), were united by VAN DER WEELE (1908) in a typical form and five varieties. According to TÁBORSKÝ (1939) the species is divided into two race groups, nine subspecies and 13 forms. He reported for the Balkan Peninsula four of them: *L. macaronius macaronius typica f. flava*, *L. macaronius macaronius pupillatus f. alba*, *L. macaronius kolyvanensis typica f. flava* and *L. macaronius kolyvanensis typica f. alba*. Most of the „subspecies“ and forms of TÁBORSKÝ (1939) are actually individual aberrations. As to the „race groups“ *macaronius* and *kolyvanensis*, they dif-

fer in the distribution. The northern part of the range of *L. macaronius* and the areas with higher altitudes in the southern part are inhabited by the typical *macaronius* and the lower territories in the southern part of the range by *kolyvanensis*. Nevertheless they cannot be accepted as subspecies because of the presence of many transitions between them. This is visible very well on the basis of the material from Bulgaria (Table 3) because its territory is crossed by both horizontal and vertical borders between the two „subspecies“. An illustration of that offers the material from localities with low altitudes (Veliko Tarnovo in North Bulgaria, 100 m: *kolyvanensis* – 5 specimens, transitional form – 5 specimens; Simitli, 300 m: *kolyvanensis* – 6 specimens, *macaronius* – 1 specimen) and with high altitudes (Damka Peak, 1600 m: *macaronius* – 2 specimens, transitional form – 3 specimens; Kopitoto, 1350 m: *macaronius*, transitional form and *kolyvanensis* – 1 specimen each; Borovets in Rila Mts., 1300-1450 m: *macaronius* – 21 specimens, transitional form – 1 specimen, *kolyvanensis* – 2 specimens). The percentage of the transitional form in the entire material from Bulgaria is 13 %.

Habitat: This species inhabits sunny grassy areas. I have found it on the Black Sea Coast in the same season in the middle of June on a meadow with luxuriant blooming herbaceous vegetation and a young wood plantation of *Pinus nigra* (above Vlas near Nesebar) and on open areas along Veleka River with low and dry grassy vegetation (Sinemorets). The species inhabits in the mountains clearings in a forest of *Picea abies* (Borovets in Rila Mts.). *Libelloides macaronius* is a typical species of steppe and forest-steppe regions. The requirements of *L. macaronius* and *L. lacteus* to the humidity and tempera-

ture are different. The former prefers higher humidity than the latter but the temperature is not so important for *L. macaronius* as it is for the thermophilous *L. lacteus*. Because of these differences the two species are established in Bulgaria at the same time and place only once (Slavyanka Mts., above Petrovo, 26.6.1979, leg. A. Popov). The two species have a similar behaviour of adults. They fly high and fast, feed on insects during the flight and are not associated with certain type of vegetation. After alighting they do not close immediately their wings in roof-like position but rest some minutes with half-open wings. The antennae remain directed upward and forward in resting position (observations on both species in Slavyanka Mts. and on *L. macaronius* in Trevnenska Mts., Borovets and Sinemorets).

Libelloides rhomboideus rhomboideus (SCHNEIDER 1845) (Fig. 9-10)

Material from the Balkan Peninsula: New for Albania: Lukova, N of Sarandë (Saranda), 250 m, 24.5.1961, 1 ♀, leg. Expedition of DEI (coll. DEI).

The specimen was identified, labelled and reported incorrect by ZELENÝ (1964) as *Ascalaphus macaronius kolyvanensis* LAXMANN. It is published as a female but is labelled erroneously as a male. The collecting date is given wrongly by ZELENÝ (1964) as 14 May but after FRIESE & KÖNIGSMANN (1962) the correct date is 24 May as the specimen is labelled. The rest of 11 specimens from five localities of *Libelloides macaronius* and the only female of *Libelloides lacteus* are identified correct by ZELENÝ (1964).

Other material: Anatolia: Cevizli, Antalya Province, Taurus Mts., 1200 m, 18.5.1999, 1 ♀, leg. S. Beshkov, J. Gelbrecht (coll. MNMHS).

Distribution: Eastern Mediterranean from South Albania and Greece (in the north to Thessaly), including Euboea Island and Greek Anatolian islands, to Israel. Syria (SZIRÁKI 1998) has to be added to the countries in the range listed by ASPÖCK et al. (2001). The record in Albania is the westernmost one of the subspecies and species and outlines the northern border of the range. After ASPÖCK et al. (1980) the subspecies is known from altitudes above 500 m and now is established lower.

Morphology: The fore wing length of the specimen from Anatolia is 22.6 mm and of the specimen from Albania is also above the maximum of 22 mm indicated by ASPÖCK et al. (1980).

Habitat: According to FRIESE & KÖNIGSMANN (1962) the locality in Albania is a hilly area which descends rather steeply to the sea. It is an almost impenetrable macchia of *Arbutus unedo*, *Pistacia lentiscus*, *Quercus coccifera*, *Smilax aspera* as well cultivated land with cultures of citrus fruits, medlar trees, fig trees and vineyards.

Cross-veins		Specimens			„Subspecies“
Left wing	Right wing	Males	Females	Total	
1	1	2	2	4	<i>lacteus</i>
1	2	2	1	3	
2	1	7	3	10	
2	2	8	8	16	transitional form
2	3	5	5	10	
3	1	1	-	1	
3	2	-	4	4	<i>klapaleki</i>
3	3	1	3	4	

Table 1: Number of cross-veins in the proximal part of the radial area of the fore wings of *Libelloides lacteus* in Bulgaria (n = 52)

Country	„Subspecies“		
	<i>lacteus</i>	transitional form	<i>klapaleki</i>
Bulgaria	63 %	29 %	8 %
Italy	10.5 %	10.5 %	79 %

Table 2: Correlation between the „subspecies“ of *Libelloides lacteus* in Bulgaria (original material; n = 52) and Italy (after PRINCIPI 1952; n = 19)

Altitude (m)	„Subspecies“						Total	
	<i>macaronius</i>		transitional form		<i>kolyvanensis</i>			
	Specimens	%	Specimens	%	Specimens	%	Specimens	%
0-400	3	9	6	17	26	74	35	100
400-800	11	39	2	7	15	54	28	100
800-1200	20	42	6	13	21	45	47	100
1200-1600	27	75	5	14	4	11	36	100
Total	61	-	19	-	66	-	146	100

Table 3: Correlation between the „subspecies“ of *Libelloides macaronius* in Bulgaria (original material; n = 146)

Note: The rate indicates the number of specimens of the „subspecies“ compared to all specimens in the respective altitudinal belt

Libelloides rhomboideus cretensis (VAN DER WEELE 1908) (Fig. 10)

Cretan endemic subspecies. The record of PIEPER & WILLMANN (1980) from Sitia is reported as *Libelloides rhomboideus*. It is included in the synonymous list of *L. rhomboideus rhomboideus* instead of *L. rhomboideus cretensis* by ASPÖCK et al. (2001).

Conclusions

Five species and one additional subspecies of Ascalaphidae occur on the Balkan Peninsula. New to the fauna of Albania is *Libelloides rhomboideus*. New for Macedonia are *Bubopsis andromache* and *Deleproctophylla australis*. New for Bulgaria is *Bubopsis andromache*. The genus *Bubopsis* is new to the faunas of Macedonia and Bulgaria and the genus *Deleproctophylla* to Macedonia. The newly established records are also second records of *Bubopsis andromache* in the continental Europe and of *Deleproctophylla australis* in Bulgaria. New localities of all species are established. The knowledge of the ranges of

three species enlarges northwards and/or westwards (*Bubopsis andromache*, *Deleproctophylla australis* and *Libelloides rhomboideus*). The species on the Balkan Peninsula divide by countries as follows:

Italy (Trieste and a part of Gorizia) (1 species), Slovenia (2 species), Croatia (3 species), Bosnia and Herzegovina (1 species), Montenegro (3 species), Serbia (without Kosovo) (no species), Kosovo (2 species), Albania (3 species), Macedonia (4 species), Bulgaria (4 species), Romania (Dobrogea), (no species), Greece (5 species and 1 additional subspecies), European Turkey, (4 species).

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Zusammenfassung

Erste Nachweise von *Libelloides rhomboideus* in Albanien, der Gattung *Bubopsis* in Mazedonien und Bulgarien und der Gattung *Deleproctophylla* in Mazedonien werden festgestellt. Neue Fundorte aller fünf Ascalaphiden-Arten der Balkanhalbinsel werden mitgeteilt. Die neuen Nachweise definieren die Nordgrenzen der Areale von drei Arten. Unrichtige Angaben über die Verbreitung mancher Arten werden korrigiert. Die Variabilität von *Libelloides lacteus* und *L. macaronius* und einige Unterscheidungsmerkmale anderer Arten werden besprochen. Originale Angaben über das Habitat aller Arten werden mitgeteilt.

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